1. For each of the matrices, find all (real) eigenvalues. Then find a basis of each eigenspace, and find an eigenbasis, if you can.
2. $\left[\begin{matrix}7&8\\0&9\end{matrix}\right]$
3. $\left[\begin{matrix}1&1\\1&1\end{matrix}\right]$
4. $\left[\begin{matrix}6&3\\2&7\end{matrix}\right]$
5. $\left[\begin{matrix}0&-1\\1&2\end{matrix}\right]$
6. $\left[\begin{matrix}1&1&0\\0&2&2\\0&0&3\end{matrix}\right]$
7. $\left[\begin{matrix}1&1&0\\0&1&1\\0&0&1\end{matrix}\right]$
8. $\left[\begin{matrix}\begin{matrix}0&0\\0&1\end{matrix}&\begin{matrix}0&0\\0&1\end{matrix}\\\begin{matrix}0&0\\0&0\end{matrix}&\begin{matrix}0&0\\0&1\end{matrix}\end{matrix}\right]$